Salmon and Steelhead Habitat Inventory & Assessment Program

SSHIAP

WDFW
Washington Department of Fish and Wildlife

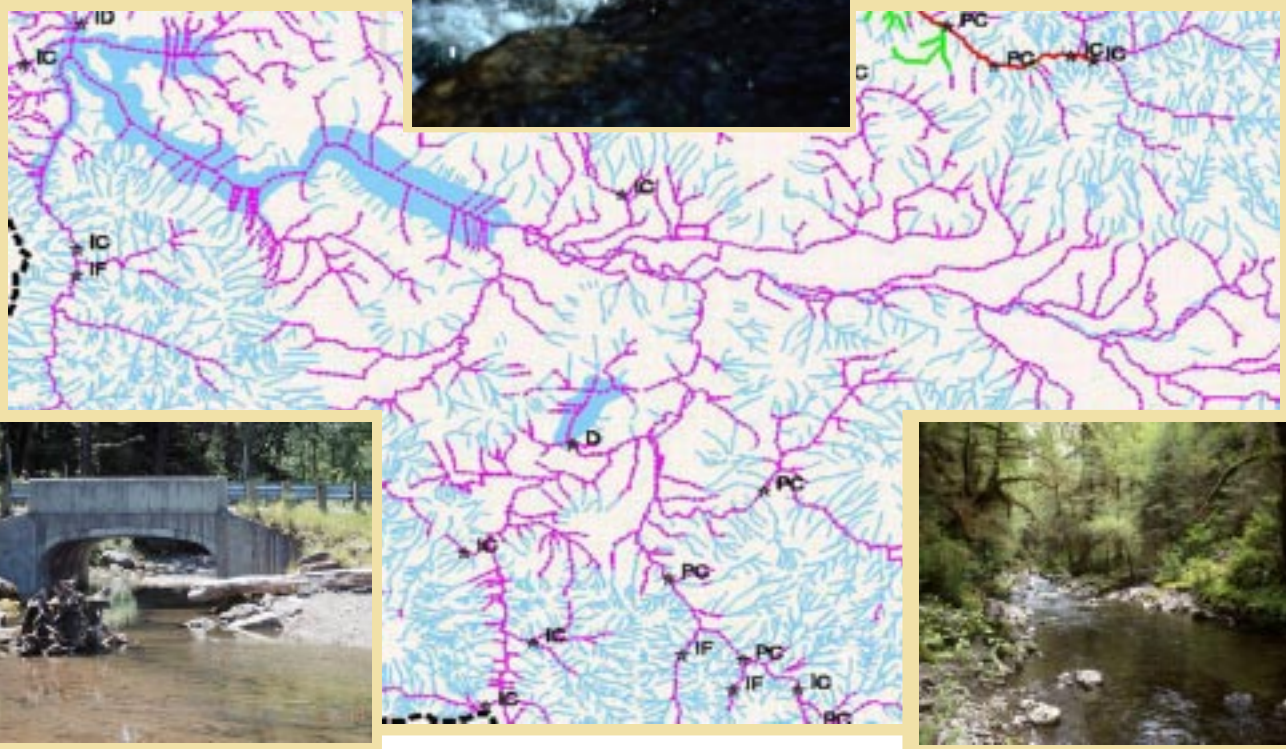
NWIFC
Northwest Indian Fisheries Commission

SSHIAP: Mapping the future of salmon recovery

The availability of sound scientific data is critical to the success of Washington's salmon-recovery efforts. Local watershed groups, state agencies and others working to restore lost salmon habitat need to know the relative condition of streams and rivers – and how they relate to local fish stocks – to determine where their efforts will do the most good.

The Salmon and Steelhead Habitat Inventory and Assessment Program (SSHIAP) is designed to help answer those questions. With help from partner organizations throughout the Pacific Northwest, SSHIAP collects information about habitat conditions and fish stocks and consolidates it into a single database. Computer-generated maps, based on the data, allow people to view salmon conditions over large areas, or find information on a single stream or tributary.

SSHIAP's growing database currently includes information about fish distribution, barriers to salmon migration (such as impassible culverts) and various habitat conditions throughout western Washington. Future plans include incorporating data on eastern Washington, estuarine conditions, and other information important to salmon recovery efforts.



How does SSHIAP work ?

SSHIAP uses a Geographic Information Systems (GIS) database that contains information on salmon stocks and habitat conditions for Washington's rivers and streams. SSHIAP presents this information in the form of computer-based maps at the 1:24,000-scale, based on data collected for each stream segment.

The Salmon Recovery Act, approved by the Washington State Legislature in 1998, requires that all information regarding habitat preservation and restoration projects be incorporated into the SSHIAP database along with salmon-monitoring data collected by local groups. Baseline information on salmon stocks is derived from the state's Salmonid Stock Inventory (SaSI), a statewide listing of salmon and steelhead stocks.

Managed jointly by the Northwest Indian Fisheries Commission and the Washington Department of Fish and Wildlife, SSHIAP also incorporates data provided by project partners throughout the Pacific Northwest. Protocols are being developed to ensure that data is scientifically sound and easy to access.

How is SSHIAP being used?

Since its initial deployment in 1995, SSHIAP has gained increasing use by resource managers in western Washington. Primary uses include:

- Analyzing habitat conditions
- Identifying and prioritizing recovery projects
- Developing recovery plans

When the Pierce (County) Conservation District planned its strategy to correct fish-blocking culverts on the Puyallup River, it used SSHIAP to help determine which projects would have the greatest impact on wild salmon production. That data was then used by the district to support grant applications for culvert projects – more than a dozen of which have been funded to date by the state Salmon Recovery Funding Board (SRFB).

Lead Entities, including the Kitsap County and the Lower Columbia Fish Recovery Board, are also beginning to use SSHIAP to help prioritize recovery projects, as are a growing number of Regional Fishing Enhancement Groups (RFEGs) and local governments.

A team of state and tribal biologists familiar with SSHIAP is currently working with those and other organizations to help them gain access and learn to use the database. Groups currently working with project sponsors to incorporate SSHIAP into their own salmon-recovery work include the Technical Recovery Teams sponsored by the National Marine Fisheries Service and planning groups affiliated with the Northwest Power Planning Council.

Status of SSHIAP

SSHIAP complete
GIS maps; SSHIAP completion goal: fall, winter '01/'02
Work in progress; SSHIAP completion goal: spring '02

For SSHIAP status by WRIA see:
http://www.wa.gov/wdfw/hab/sshiap

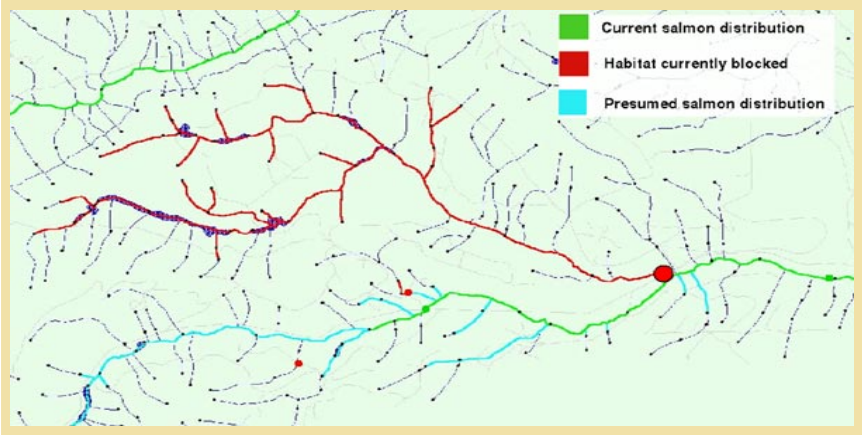
SSHIAP project leaders maintain a growing database that will become increasingly more useful to resource managers over time. Currently, computer-based maps of rivers and streams are completed for 25 of the state's 62 Water Resource Inventory Areas (WRIAs). For 10 of those 25 WRIAs, information is available on habitat quality (e.g. stream gradients), habitat types (e.g. tributaries, side channels), fish migration barriers and the distribution of salmon species. Future plans include incorporating data on eastern Washington, estuaries, and other information important to salmon recovery efforts.

Using SSHIAP in Recovery Planning

SSHIAP can be a powerful tool for identifying habitat-restoration projects that have the greatest benefits to fish. Drawing on data collected on fish distribution and stream conditions, computer-generated maps created by SSHIAP allow resource managers to identify problems in a watershed. Data tables provide habitat information for each stream segment and the ability to quantify the benefits of a particular restoration project.

The Pierce Conservation District's analysis of Ohop Creek provides an example SSHIAP's capabilities. Map 1 pinpoints a culvert that blocks fish passage to the north fork of the creek. (Note that salmon still populate the south fork of Ohop Creek.)

Map 2 shows the next step in the SSHIAP analysis – an inventory of stream gradients on the north fork and its tributaries. Stream gradients are one of several key watershed characteristics contained in the SSHIAP database that can determine whether salmon will repopulate a stream after a habitat project is completed.



Map 1: *Impassable culverts and and blocked streams appear in red.*

Map2: *Map and pie chart show stream miles opened according to gradient. Gradient of less than 4 percent are best for young coho salmon.*

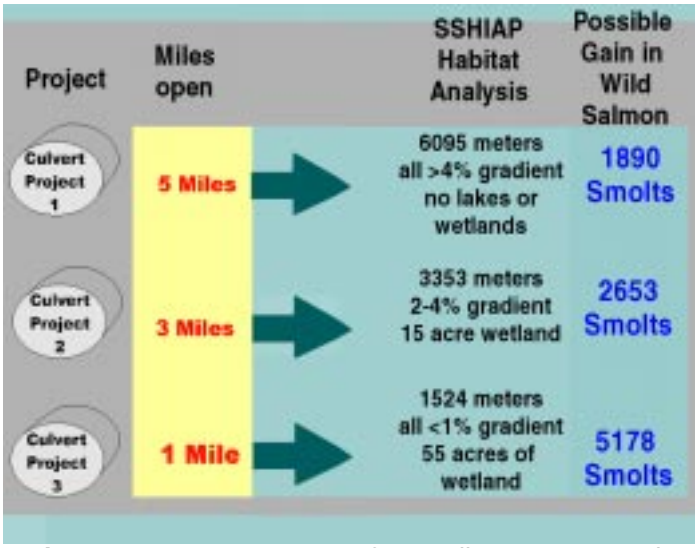


Figure 1: *SSHIAP moves us from "Miles open" to "real benefits for fish"*

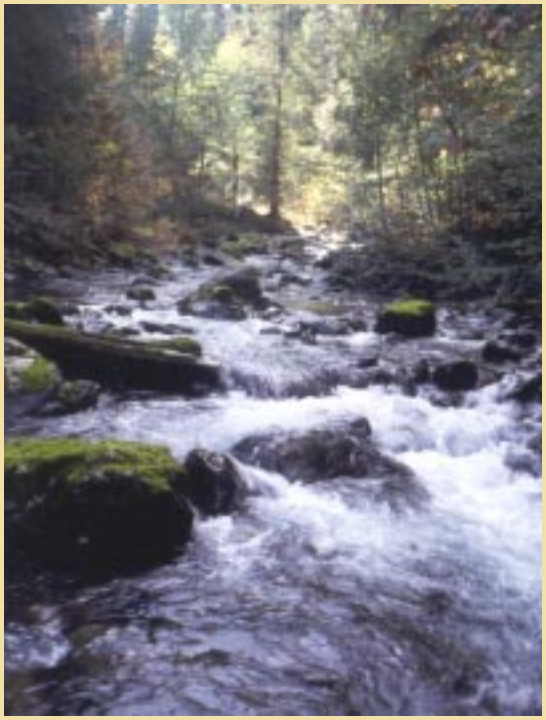
Prioritizing projects

SSHIAP can also give resource managers valuable information in prioritizing restoration projects. Figure 1 shows three potential culvert projects and the number of river miles that each would open to fish passage.

In this case, however, SSHIAP data indicate that the project that would open up the greatest number of stream miles may actually offer the fewest benefits for salmon. Why? Other projects have the potential for greater smolt production because they would open up more habitat that is favorable to spawning and rearing.

Project Partners

29 SSHIAP Project Partners:
Batelle Northwest Laboratory;
Evergreen State College;
Grays Harbor College;
Green River Community College;
Jefferson County;
King County;
Kitsap County;
National Marine Fisheries Service;
People for Puget Sound;
Pierce County Conservation District;
Salmon Recovery Funding Board;
University of Washington;
US Forest Service;
South Sound Regional Fisheries Enhancement Group;
Washington Conservation Commission/Limiting Factors Analysis;
Washington Conservation Comission/Conservation Reserve Enhancement Program;
Washington Department of Ecology;
Washington Department of Natural Resources;
Washington Department of Transportation;
US Geological Survey;
Western Washington University;
Central Washington University;
Lower Columbia Fish Recovery Board;
The Yakama Nation;
Confederated Tribes of the Colville Reservation;
Skagit County;
The Western Washington Treaty Tribes and the Washington Department of Fish and Wildlife are the lead organizations on this program.



For more information on SSHIAP visit:

http://www.wa.gov/wdfw/hab/sshiap

"In Washington, the detailed salmon habitat and hydrolayer information provided by SSHIAP and its partners will allow us to refine the information used for crucial fish and wildlife conservation efforts.

Further, the habitat protocols coming out of SSHIAP will have a direct bearing on how we collect salmon habitat information across the Columbia River Basin."

- Chip McConnaha, Northwest Power Planning Council

"The Pierce Conservation District has completed extensive culvert assessments and habitat inventories throughout Pierce County Watersheds. The SSHIAP program has served as an essential utility to process our data and identify and prioritize potential enhancement projects that have the greatest benefit for fish. SSHIAP also serves as a central hub to store and manage data in a format compatible with many user groups."

-Marc Wicke, Pierce Conservation District